

ACCELERATION OF TRANSIMS DEPLOYMENT REQUEST FOR BAA PROPOSALS

Section 5512 of the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)*, Public Law 109-59, provides funding for the acceleration of TRANSIMS deployment, training on the use of TRANSIMS and development of new applications of TRANSIMS. The goal of this Broad Agency Announcement (BAA) is to support applied research and scientific study directed toward increasing knowledge and understanding to broaden the TRANSIMS user base and to provide for applications of TRANSIMS representing a diversity of populations, geographic regions and analytical methods.

A. Background

The Transportation Analysis and Simulation System (TRANSIMS) is a set of travel modeling procedures designed to meet the State Department of Transportations' (DOTs') and Metropolitan Planning Organizations' (MPOs') need for more accurate and more sensitive travel forecasts for transportation planning and emissions analysis.

Because TRANSIMS simulates and tracks travel by individuals, the benefits to and impacts on different geographies and travel markets can be evaluated as well. Furthermore, TRANSIMS has the capability to evaluate highly congested scenarios and operational changes on highways and transit systems. TRANSIMS differs from previous travel demand forecasting methods in its underlying concepts and structure. These differences include a consistent and continuous representation of time; a detailed representation of persons and households; time-dependent routing; and a person-based microsimulator.

There are four primary modules:

- Population synthesizer,
- Activity generator,
- Route planner, and
- Traffic microsimulator.

Using these components, a model may be constructed that estimates activities for individuals and households, plans trips satisfying those activities, assigns trips to routes, and creates a microsimulation of all persons, vehicles and resulting traffic on modeled transport systems in given study area.

Researchers at the Los Alamos National Laboratory designed and developed the original TRANSIMS algorithms and software. The design for TRANSIMS is based on requirements in the *Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)* (Public Law (PL) 102-240), the *Transportation Equity Act for the 21st Century (TEA-21)* (PL 105-178) as amended by the *TEA 21 Restoration Act* (PL 105-206), and the *Clean Air Act of 1990* (PL 101-549) Amendments. The development of TRANSIMS has been funded by the Federal Highway Administration, with support from the Federal Transit Administration, the Office of the Assistant Secretary for Transportation Policy of the United States Department of Transportation, and by the Environmental Protection Agency.

B. Current Status

TRANSIMS development has proceeded along several lines. These include development of application methods, software and supporting utilities.

Methods Development

Currently USDOT is sponsoring the development of a tour-based model, using TRANSIMS, in Portland, Oregon. The effort has been divided into two tracks:

- Track 1 uses existing trip tables, combined with the TRANSIMS Router and Microsimulator, to develop regional simulations of travel. The Track 1 effort has demonstrated that using network and trip table data currently available at most MPOs, regional simulations can be conducted. As part of the Track 1 effort utilities have been developed to convert existing networks and trip tables to TRANSIMS format.
- Track 2 will develop tour based forecasting procedure based on the Portland transportation network and demand data available to the Portland MPO. We expect to complete Track 2 by June of 2007.

Software

The software and source code is now available under an open source agreement known as the NASA Open Source Agreement v1.3. This license makes the source code publicly available and requires that any changes to the original code also be made publicly available. Further information on the NASA license and the open source release can be found at <http://www.opensource.org/licenses/nasa1.3.php>

In addition to the core software, supporting utilities have been developed based on the work in Portland, these utilities include methods to convert node and link data into TRANSIMS format, methods to estimate intersection signalization and other utilities to assist with data preparation and application. For more information on the software and supporting utilities, see <http://tmip.fhwa.dot.gov/transims>

C. Objectives

FHWA seeks to expand the knowledge, understanding and implementation of TRANSIMS capabilities and applications, and seeks to develop new approaches/tools/applications covering a diversity of methods, users and geographic area. Prospective offerors will submit proposals which:

1. Increase deployment of TRANSIMS
2. Broaden the TRANSIMS user base, and
3. Develop new applications of TRANSIMS.

D. Instructions for Preparation of Proposals

The scope of this announcement is intentionally broad to invite innovation and to provide the FHWA the flexibility to sponsor research which best addresses its mission and goals. In keeping

with FHWA's desire for innovation and flexibility, the specific approach in the selected proposals will vary and will be negotiated.

Any resulting contracts will contain appropriate federal agency clauses for the type of procurement vehicle awarded. Prior to award, the Offeror shall be required to submit "Certifications and Representations." Data and reporting requirements will be negotiated with the firm(s) selected for award(s). In responding to this announcement, please prepare your proposal in three separate parts, as follows:

Part I. TECHNICAL – Within the page limitation of fifteen (15) double spaced pages for this part, the Offeror's proposal shall include, but not be limited to, the following components and shall be organized accordingly:

Problem Statement - This will include a statement of the problem to be addressed and why it is an issue for transportation planners. The problem statement will address both the national significance of the problem and the significance of the problem to the local area. The page limitation for this section is three (3) pages.

Work Plan - The workplan shall clearly indicate how TRANSIMS methodology can be used to analyze the problem. The work plan shall describe the necessary tasks required to address the problem. It shall describe a timeline for completion of each task and the interrelationships of all tasks. It shall address data collection, use of computer hardware and software, installation of TRANSIMS and methods for visualizing TRANSIMS output. The first task in all work plans shall be the installation of TRANSIMS and validation of the proper installation. The page limitation for this section is ten (10) pages.

Data Sources - Proposals shall clearly identify all data sources. Data sources will include both transportation supply and demand data. This section shall also describe plans to convert the data to TRANSIMS format. All applications shall use real world data. Notional data, other than for installation test purposes, is not acceptable. The page limitation for this section is two (2) pages.

Part II. STAFFING - Within the page limitation of thirteen (13) pages for this part, the Offeror's proposal shall include, but not be limited to, the following components and shall be organized accordingly:

Staffing and Computer Support –The names of all personnel and the position they will occupy as related to this project must be provided. The estimated professional and technical staffing shall be provided in staff hours, on a task-by-task basis. Biographical summaries of key personnel shall also be included and shall not exceed three (3) pages per person..

Applicants must demonstrate experience in travel modeling and transportation simulation technologies. In addition teams should have access to LINUX computer systems and have team expertise in LINUX.

Planning Agency Support - Planning agencies, either local or state, must be involved in all proposals. At a minimum, agencies must be involved in reviewing the work plan and reviewing the output of the TRANSIMS application. Applications must include a letter from an appropriate planning agency indicating an understanding of the project and, at a minimum, an agreement to review the results.

Part III. COST - The Offeror's proposal shall include, but not be limited to, the following components and shall be organized accordingly:

Funding – The cost or price proposal shall be specific, complete in every detail, and separate from your technical and staffing proposals. The cost or price breakdown shall be submitted utilizing Standard Form 1411 (Contract Pricing Proposal Sheet) as a cover sheet, together with supporting detailed cost data, including any subcontractor data, in accordance with FAR 15.804-6.

The estimated budget and spending plan for completion of the project must be identified. The maximum federal funding per award is \$200,000.

(As applicable) Identify any cost sharing to be applied. For in-kind cost sharing provide the fair market value (Government does not accept “donated” resources).

E. Proposal Format

Each Offeror must submit 4 sets (*a clearly marked original plus 3 clearly marked copies*) in three-ring loose-leaf binders, with each Part and Section of information under a separate tab divider and each page numbered. Each Offeror must also submit 1 set in electronic format (on compact or zip discs in Microsoft Office 2000 or equivalent formats).

The technical proposals (Part I) shall be limited to fifteen (15) pages, staffing proposals (Part II) shall be limited to thirteen (13) pages. The principal investigator qualifications shall be submitted as a separate resume within the Part II page limit. There is no page limit for cost proposals (Part III) or agency commitments. Agency commitments may be submitted as part of Part III.

Parts I and II may be placed in the same binder. Part III shall be in a separate binder. Proposals shall be submitted on 8.5 by 11 inch paper, except for foldouts used for charts, tables, appendices or diagrams, which shall not exceed 11 by 17 inches. A page is defined as one side of a piece of paper. A piece of paper with printing on both sides is considered 2 pages. Margins (excluding headers and footers) shall be no less than 1 each on both sides, top and bottom of the page. Regular text print type shall not be less than 10 points or more than 12 character per inch, and shall not exceed 6 lines to the vertical inch. **Pages exceeding the page limitation will not be read or evaluated.**

The evaluation board may take into account when making its evaluation, any failure to conform to the instructions and rules in this section or any attempt to evade these specifications and rules on the basis of technicalities, as indicators of future performance.

If an Offeror does not understand these instructions, then they must submit their questions(s) to the Contracting Officer for clarification sufficiently (*in advance*) of the deadline for the receipt of offers to get an answer in time to meet that deadline.

F. Submission of Proposals

This notice is only a draft and proposals are not being requested at this time. It is anticipated that a formal announcement will be made in June of 2006. Information regarding the submission of proposals will be provided at that time.

G. Deliverables

The specific deliverables will depend upon the scope and objectives of the negotiated award. At a minimum, the contractor shall submit a final report and technical summary that documents the research conducted in each task identified in the proposal. Additional deliverables such as interim reports, computer programs and documentation, instrumentation and prototype equipment could be required and the specific deliverables will be identified in the negotiated statement of work.

H. Contract Period

Negotiable, but no more than 18 months from date of award.

I. Contract Type

Offerors may apply for either a cooperative agreement or a contract. Cooperative agreements require a 50% match of non-federal funds. In kind contributions may be considered part of the match.

J. Clarifications and Additional Information

Experience in running TRANSIMS is desirable but not essential.

Funding must be sufficient to cover the scope of the proposed project. Additional funding from sources other than DOT is encouraged. Applications will be evaluated on the ability to accomplish the proposed scope with the resources available.

Since the overall goal is the dissemination of TRANSIMS and building a TRANSIMS user community, consortiums of applicants are encouraged. Consortiums may include, but are not limited to, combinations of consulting firms, universities and MPOs or State DOTs. All proposals must have the endorsement of a planning agency and a process for the planning agency to review results. Consortiums may be led by a university, consulting firm or planning agency.

The Department of Transportation is developing a TRANSIMS installation package which will include TRANSIMS software, test set ups to support the installation of the software and test data sets. Offerors are expected to provide problem data and computer capability. Each proposal shall include an initial task to install TRANSIMS and verify installation using the test procedures and data. In the event the installation package is not complete at the time of the award, commencement of the project will be delayed until the package is available.

Awards will be made in FY2006.

K. Evaluation of Proposals and Award Evaluation Criteria:

Proposals received will be evaluated in accordance with the evaluation criteria specified herein through a peer or scientific review process. The primary basis for selecting proposals for acceptance shall be technical, importance to agency programs, and availability of funds. Cost realism and reasonableness shall also be considered to the extent appropriate. Preference will be given to cooperative agreements. Technical factors are more important than cost factors, and technical evaluation will be based on the following criteria listed in descending order of importance:

1. Ability to complete the proposed work within available resources
2. Level of commitment by the planning agency to the proposed project – One of the primary objectives of this deployment is the use of TRANSIMS by planning agencies. ‘Use’ does not necessarily mean installing and running TRANSIMS but does imply integrating the results of TRANSIMS into the agency decision-making process. We do not expect agency’s to immediately commit to the use of TRANSIMS, but priority will be given to agencies which express an interest in the use of the results.
3. Broadening of the TRANSIMS user community - While agencies use the results of model, universities and consulting firms play a critical role in the dissemination of new technologies. Universities play a role through research and training of students on transportation planning methods. Consultants have developed most of the models in use in the United States. Proposals which involve Universities, consultants or others who play a major role in technology deployment are encouraged.
4. The ability of the proposed analyses to take advantage of TRANSIMS’ capabilities – TRANSIMS is a new technology with new capabilities. Offerors should carefully review the capabilities of TRANSIMS and identify how those capabilities address the proposed application.

Offerors should address in full each of the above criteria. The comprehensiveness and quality of the proposed research study, especially the completeness of the proposed work plan, will contribute significantly in the selection process, and innovative solutions, approaches and techniques which address the stated objectives will be considered. The offeror’s ability to identify technical needs and to design a study to meet these needs within budget are essential skills in the accomplishment of the announcement objectives. The FHWA reserves the right to select for award any, all, part or none of the proposals submitted.

L. Government Rights

Discuss data rights

M. Award Criteria

The Government anticipates that approximately \$400,000 will be dedicated to this program, subject to availability of funds, and anticipates making multiple awards. It is anticipated that no

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single proposal or organization will be funded for more than \$200,000 in federal funds. This Broad Agency Announcement does not commit the Government to pay for response preparation costs.

N. Eligibility

All responsible sources may submit a proposal which shall be considered by the FHWA. Consortium arrangements and industrial partnering agreements are encouraged.

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